VOL. XIII. NO. 4.—BOTANICAL GAZETTE.—APRIL, 1888.

# New or rare plants.[1]

ASA GRAY.

**Hibiscus incanus** Wendl. Doubting the sulphur colored or straw-yellow petals, I referred this species to *H. lasiocarpos* Cav. in Proc. Am. Acad. xxii, 302. But I find that Dr. Chapman well knows the yellow-flowered plant, and I have now received it from Alabama, from F. J. Muller through Prof. Meehan. Chapman's character is a good one, but I have passed some dried specimens for a form of H. Moscheutos, which it much resembles. I have confirmed *H. lasiocarpos* Cav. for the hairy-fruited species, by referring to the original in herb. Jussieu at Paris. I here record the rehabilitation of H. incanus, because in these days catalogues are so numerously and promptly published.

**Blepharipappus lævis.** Glabrous and mostly smooth up to the few-flowered small heads: stems and effuse branches filiform: leaves all appressed and small, the upper squamaceous: involucral bracts 6 to 8, oblong: flowers open through the day (not closing in sunshine in the manner of B. scaber). *B. scaber*, var. *lævis* Gray, Syn. Fl. 1², 304.—E. California to S. Oregon; collected near Waldo in the latter state by *Brandegee* in 1885, and *T. Howell* in 1887. The latter indicated to me the diurnal anthesis, which, with the other characters, shows this to be a wholly distinct species.

**Hieracium Howellii.** Allied to H. Greenei, but decidedly tomentose-canescent, even to the similar involucre, and below more villous-crinite: stem (a foot or more high) leafy up to the panicle: pappus apparently pure white, but still young.—Deer Creek Mountains, S. Oregon, *T. Howell*, July, 1887.

**Troximon barbellulatum** Greene in Gray, Syn. Fl. 1², 437. Mr. Howell has collected this rare species, July 19, 1887, in a dwarfer form, and with pappus bristles so decidedly barbellate that it might be called subplumose!

*Cambridge, Mass.*

[1] This paper, marked "BOT. GAZETTE," was found lying upon Dr. Gray's study table.

## Undescribed plants from Guatemala. III.

JOHN DONNELL SMITH.

(WITH PLATE II.)

**Mimosa sesquijugata.** (Series *Sensitivæ* Benth.)—Fruticulose, suberect, glabrous, unarmed: stipules linear, rigid, striate, setose-ciliate, 1½ lines long; petioles firm, 12–18 lines long; leaflets coriaceous, glaucous, oblong, obtuse or acutish, mucronate, base dimidiate-cordate, 4-nerved, reticulate, 8–10 lines long, half as broad, margin and undersurface rigidly setose, interior leaflet of lower pair wanting; rhachises bristly, 1–2 lines long: flowers tetramerous; peduncles retrorsely strigillose, more than half as long as petioles; bracts subulate, ciliate, less than half as long as corolla: calyx almost obsolete, hyaline, ciliate-toothed: corolla glabrous, purple, 1 line long: stamens 3–4 lines long: legume not seen.—Near the Brazilian *M. glaucescens* Benth. *ex char.*—In rock-fissures near Santa Rosa, Dept. Baja Verapaz, alt. 5,000 feet, July, 1887. (Ex Plantis Guatemalensibus Tuerckheimianis, quas edidit John Donnell Smith, 1327.)

**Melampodium brachyglossum.**—Annual, herbaceous, 2–3 feet high: stem pilose, glandular above, dichotomous, branches quadrangular: leaves scabrid on both surfaces, subtriplinerved, coarsely toothed, 1½–2½ inches long, triangular, acuminate, abruptly contracted to a winged petiole dilated at base; varying to oblong and lanceolate, cuneately contracted below the middle, sessile: peduncles filiform, 1–2 inches long: heads 2 lines broad and high; involucral scales 3, shortly connate, round-acuminate, pilose; rays 6–7, quadrate-orbicular, ¾ line in diameter, 2–3-lobed, pilose beneath, yellow; fructiferous bracts rugose, callose-tuberculate; achenia incurved-pyriform, concentrically striate, 1 line long. —Coban, Dept. Alta Verapaz, alt. 4,300 feet, July, 1885, May, 1886. (Ex Pl. cit. 114, 761.)

**Ardisia Tuerckheimii.**—A small tree: glabrous throughout: leaves coriaceous, glaucous, lineolate and punctate beneath, entire, oblong, 3–4 inches long, a third as broad, apex caudately produced and obtuse, narrowed to a short petiole: corymbs terminal, shortly peduncled, half as long as leaves; pedicels 3–6, subumbellate at apex of flexuose rhachis and of its 2–3 primary branches, 7–9 lines long: sepals 5, ovate-oblong, a third as long as petals, persistent in fruit: petals 5, elongate-oblong, 3½ lines long, obtuse, white, like the sepals

rubropunctate in lines and dots: stamens 5, 2½ lines long; anthers exceeding the flat tapering filaments, linear-oblong, quadrangular, base cordate, apex obtuse and mucronulate, biporose: style nearly equaling petals; ovules 12–16: fruit red, glandular, 3 lines in diameter, crowned with persistent base of style. — Distinguished by secondary branches of inflorescence two to three times exceeding primary ones.— Mountain forests of Pansamalá, Dept. Alta Verapaz, alt. 3,800 feet, Aug., 1886. (Ex Pl. cit. 1,035.)

**Cobæa triflora.**—Leaflets 3-jugate, uniform, oblong-lanceolate, tapering from the middle to an acute mucronulate apex, somewhat narrowed to a cordate-truncate base, 2½–3 inches long, marginate, petiolules 4–5 lines long: peduncles 2–3 inches long, terminal pedicel 6–8 inches long, the two lateral of later development from alternate foliaceous bracts: calyx-segments almost free, patent, lanceolate-acuminate, margins revolute, 1 inch long, like leaflets naked, yellowish-green dotted with red, pale within: corolla broadly subcampanulate, 1½ inches long, pubescent, pale-yellow, reddish below; lobes short, rounded, erect: stamens and style shortly exserted.—Leaves as figured for *C. gracilis* Hemsl. in Œrst. L'Amér. Centr. t. XVI: flowers nearest to the Ecuador *C. campanulatus* Hemsl.—Banks of Rio Cajabon, near Coban, alt. 4,300 feet, Dec., 1886. (Ex Pl. cit. 204.)

**Beloperone Pansamalana.** (§ *Beloperonides.*)—Fruticulose, epiphytal, prostrate: branches ascending, dichotomous, tetragonal, pubescent in two lines: leaves membranaceous, opaque, beset with cystoliths, glabrous, dark-green above, glaucous beneath, rhomboidal to elliptical, each end acuminate, 12–16 lines long, 6–7 broad, petioles 1–3 lines long: flowers 2–4, at length pedicellate in a subsessile fascicle: spatulate bracts 3 lines long, linear-spatulate bracteoles a third longer, both truncate at apex and glandular-hairy: calyx-segments linear-setaceous, 5 lines long, barbellate: corolla 18–20 lines long, scarlet; lips nearly equaling tube and each other, hairy without, glabrate within, the posterior one bidentulate, the anterior 4 lines broad with lobes 2 lines long: stamens nearly equaling lips; lower cell remote, scarcely calcarate: style shortly exsert.—Pansamalá forest, alt. 3,800 feet, Oct., 1885, Sept., 1886. (Ex. Pl. cit. 732.)

**Thyrsacanthus geminatus.**—Suffruticose, ferruginous-pubescent: stem tetragonal: leaves pergameneous, nitidous ex-

cept veins, oblong-obovate, cuspidate-acuminate, long-attenuate to a small obtuse base, shortly petioled, 10–14 inches long: thyrsi in a brachiate long-penduncled foliaceous-bracted panicle, virgate, 6–12 inches long: cymes subsessile, at length geminate on a bipartite peduncle 3 lines long, 3–10-flowered, exceeding verticillastrate internodes, small bracts and bracteoles linear-lanceolate, pedicels 4–6 lines long: calyx-segments linear-lanceolate, 1½ lines long: corolla straight, 13 lines long, purple, tube equaling inflated throat; lobes nearly equal, oval, ciliate, posterior one erect and 2-lobuled, others reflexed and 4 lines long: stamens nearly equaling corolla-limb, cells equal; staminodes minute, uncinate.—The allied *T. callistachyus* Nees in DC. has leaves less minutely and prominently reticulated, cymes subsessile, corolla-limb smaller with (*ex* Nees) superior lobe narrow and entire, stamens very short and included.—Pansamalá forest, alt. 3,800 feet, Oct., 1885, May, 1887 (Ex. Pl. cit. 740.)

**Scutellaria lutea.** (§ *Stachymacris* Benth.) — Fruticose; stems terete, fusco-velutinous; branches and inflorescence canopilose, glandular: leaves like flowers sericeous and atomiferous, oval to ovate-oblong, 8–15 lines long, crenate, petioles 2–3 lines long: racemes loose of 5–6 pairs of declinate flowers; bracts 2–3 lines long, lower ones foliaceous and petioled: calyx 2 lines long, exceeding pedicels; crest in fruit enlarged to 4 lines long, obovate, appressed, yellow: corolla elongate, 1 inch long, sulphur-yellow, tube 3 lines long, throat gradually dilating, lips equal and 2 lines long; posterior lobe of upper lip small, emarginate, its lateral lobes equaling the erect crenulate plicate-edged lower lip: anthers naked; filaments margined: disk obovate, nearly equaling ovary, contracted to oblique short gynophore: nutlets globose, granulate.—Forest near Santa Rosa, alt. 5,000 feet, July, 1887. (Ex Pl. cit. 1,309.)

**Dorstenia Choconiana** Watson in Proc. Am. Acad. XXII, 477, var. (v. form.) **integrifolia.**—Rootstock tuberculate: stems simple or furcate: leaves entire, margins crispate and undulate: peduncles 1–2 inches long: receptacle acetabuliform, 9–12 lines in diameter, turbinate, pallid externally; border of disk green within, 2½ lines broad; alveolate areoles quadrate, white, green-bordered: pistillate florets 6–7, intermixed with numerous staminate ones: nucules stipitate, obovoid, compressed above and below in opposite axes, a line or more long

and broad; endocarp shining-white, callose, delicately reticulated. — Pansamalá forest, alt. 3,800 feet, Sept., 1886, April, 1887. (Ex Pl. cit. 751.)—Freiherr von Türckheim's numerous specimens, representing all stages of growth, show no tendency toward lobing of leaves. The originals of Dr. Watson's description, sparingly collected by him in the *tierra caliente*, are somewhat less robust plants, and the leaves have a more distinctly continuous intermarginal vein; the flowers were not described, and in the specimens seen are insufficient for examination.

**Asplenium Vera-pax.** (§ *Diplazium.*)—Stipes tufted from a short rhizome with a few black scales toward base, 18 inches long: fronds subcoriaceous, glabrous, pale beneath, punctate, ovate-lanceolate, 12 inches long, lower half pinnate, the upper cleft or lobed and tapering to an elongated serrate apex: rhachis sulcate on face, angled by decurrent pinnæ, bearing in their axils a gemmule covered with minute scales: pinnæ 7–8 to a side, oblong to oblong-lanceolate, acuminate, distantly serrulate, base truncate on upper side and reduced on lower; basal pair stalked, produced, 4¼ inches long, 1 inch broad; others a third to a half smaller, adnate, confluent above: veins single, erecto-patent, mostly 1–3-branched, the lowest anterior veinlet soriferous: sori 15–23 to a side, 6–8 lines long, falling short of both midrib and margin, diplazioid chiefly below middle of pinnæ. (Plate II.)—Pansamalá forest, Dept. Alta Verapaz, alt. 4,000 feet, Sept., 1886. (Ex Pl. cit. 850.)

*Baltimore, Md.*

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## Notes on Western Umbelliferæ. I.

JOHN M. COULTER AND J. N. ROSE.

In the following notes those specific names are used which are commonly known to collectors.

**Podosciadium** Gray has been rather remarkable on account of its poor representation in herbaria, and the restricted range of its species. Curiously enough, both of these things have come from a strange confounding of its species with those of Carum, and herbaria are found to be richer in these forms than their labels show, and their range has been very materially extended.

*P. Bolanderi* Gray has been badly confused with Carum Gairdneri and C. Oreganum by collectors, and under these names it is found in many herbaria. A glance at the conspicuous scarious-bracted involucels, broadly concave seed-face, and numerous oil-ducts, should at once distinguish it from any species of Carum. It is an interesting fact that a species thought to be so local is now found somewhat widely distributed through California and Oregon, having heretofore concealed its identity under a general similarity of habit to Carum. Its reported stations are now as follows: California, Mariposa Trail, Yosemite (*Bolander* 4898, in 1866 and 1873), Big Meadows, Plumas county (*Mrs. R. M. Austin*, in 1880), Emigrant Gap (*M. E. Jones* 3603, in 1882); Oregon, Union county (*Cusick* 1097, in 1883), Stein's Mountain (*Howell*, in 1885).

*P. Californicum* Gray, thought to be known only from the single collection of Bigelow, made at Knight's Ferry, Stanislaus county, California, in 1853, turns up in the collection of G. R. Vasey (no. 227) from Santa Lucia Mountains, California, July, 1880, having been distributed as Carum Kelloggii.

**Musenium** Nutt. seems to be British American, extending into the United States along the Rocky Mountains. Few specimens have been collected within our borders, and hence herbarium material is very scanty. Professor Macoun has discovered M. divaricatum and M. trachyspermum to be quite abundant on the great plains of the Northwest Territory, but M. tenuifolium still remains very poorly known, mature fruit of it not yet having been collected.

**Peucedanum Canbyi,** n. sp. Apparently acaulescent, but with a short underground stem from a thick more or less elongated rootstock which ends in a globose tuber half to an inch in diameter, glabrous, 3 to 8 inches high: leaves ternate-pinnatifid or bipinnate, the ultimate segments small, with 3 to 5 linear-oblong lobes: umbel equally 5 to 10-rayed, with no involucre, and involucels of narrowly linear scarious-margined bractlets; rays 1 or 2 inches long; pedicels 4 to 6 lines long; flowers white: fruit ovate-oblong, glabrous, 4 lines long, 2½ lines broad, with wings about half as broad as body, and filiform dorsal and intermediate ribs; oil-tubes solitary in the intervals (the lateral intervals often with 1 or 2 accessory but shorter ones), 2 to 4 on the commissural side.—High ridges, E. Oregon (*Howell*, in April, 1880, and

May, 1882, as no. 67); Union county (*Cusick* 1010, in 1882 and 1884).—This species has been referred to P. Nevadense, as several other species have been, but always with a doubt. In Howell's distribution it is labeled P. dasycarpum. It has been too often collected in its early condition, before either fruit or leaves had matured, and in this stage has been very puzzling. Mature fruit of Cusick's collecting, in Canby's herbarium, has enabled us to characterize it as quite a distinct species. It belongs to that tuberous-rooted group of which P. farinosum and P. Cous are representatives.

**Peucedanum Sandbergii,** n. sp. Caulescent, branching at base, an inch or two to a foot high, from an elongated comparatively slender root, rough puberulent: petioles wholly inflated, with a very conspicuous white-scarious margin; leaves ternately or pinnately dissected, the ultimate segments very short linear: umbel very unequally 6 to 15-rayed, with no involucre, and involucels of distinct linear-lanceolate bractlets; rays 1 to 4 inches long; pedicels a line or two long; flowers bright yellow: fruit ovate, puberulent, 2 to 2½ lines long, 1½ lines broad, with very narrow wings, and filiform dorsal and intermediate ribs; oil-tubes 4 to 5 in the intervals, 6 on the commissural side; seed-face plane.—Bare mountain tops, 5,000 feet altitude, along snow-drifts, Kootenai county, N. Idaho (*J. H. Sandberg* 47); Upper Marias Pass, 7,300 feet altitude, N. Montana (*W. M. Canby* 153); North and South Kootenai Passes, British Columbia (*Dawson* 876).—This very distinct alpine species is remarkable for its inflated petioles with very broad glistening scarious margins, which form the most conspicuous feature of the plant. The peduncles are short when the plant first blooms, rising but a few inches above the ground; but they rapidly elongate, becoming as much as a foot high. The fertile rays also are often very much elongated, becoming many times longer than the sterile rays.

**Peucedanum Geyeri** Watson still remains an almost unknown species, mature fruit not yet having been collected. The species is badly confused by collectors with *P. farinosum* Geyer. It seems to have been the habit of many to lay in a good stock of P. farinosum and then to label half of it P. Geyeri. Specimens of the latter species are very much to be desired.

**Peucedanum nudicaule** Nutt. This species was first reported by Bradbury and Nuttall from the "high plains, on the upper

part of the Missouri, Arkansas, and the Rocky Mountains," and also collected by Lewis and Douglas "on the Oregon." Since that time true P. nudicaule seems to have been lost sight of, until it has now turned up from its original range, in the collections of Canby and Tweedy. The former sends it from Montana and Dakota (no. 152); the latter from the National Park (no. 855). Forms referred to this species are common enough; but we have not yet seen true P. nudicaule away from its original range "on the head-waters of the Missouri, etc." If any one can supply fruiting specimens of the so-called P. nudicaule, which is said to extend as far eastward as Iowa, we would esteem it a favor.

**Angelica arguta** of Nuttall, reported by him from Vancouver Island, has not been collected since until discovered by Howell in 1882 at the base of Mt. Adams, Washington Territory, and distributed as A. genuflexa; and then in 1886, along Hood river, Oregon, by the same collector, where it had been collected by Henderson (no. 382), in 1884, and also distributed as A. genuflexa. A fruiting head of this species was also sent by Tweedy from the Cascade Mountains, Washington Territory, mixed with his A. genuflexa, no. 280. Curiously enough, last summer's exploration of Vancouver Island by Professor Macoun failed to reveal A. arguta in its original station, but discovered plenty of A. genuflexa.

**Angelica Hendersoni,** n. sp. Very stout, densely tomentose throughout, especially the whitened lower surfaces of the leaves and the inflorescence: leaves quinate then pinnate; leaflets thick, broadly ovate, 3 to 4 inches long, 2 to 3 inches broad, obtuse, serrate: umbels equally many-rayed, with no involucre, and involucels of numerous linear-acuminate bractlets; rays 1 to 2 inches long; pedicels a line or less long; flowers white: fruit oblong, more or less pubescent, 3 lines long; dorsal and intermediate ribs prominent, lateral wings thick and corky, as broad as body; oil-tubes solitary in the intervals, 2 on the commissural side: seed deeply sulcate beneath the oil-tubes, with plane face.—Bluffs, moistened by sea spray, Ilwaco (Long Beach), Washington Territory, Aug. 5, 1885 (*Henderson* 2158).

**Sanicula laciniata** Hook. and Arn. is very much confused in herbaria with S. bipinnatifida, a good deal of S. laciniata having been distributed as S. bipinnatifida, as, for instance,

Pringle of 1882, and Jones 3149. The palmately parted leaves, spinosely pointed teeth and bractlets, yellow flowers, less prickly fruit, and sulcate involute seed-face of S. laciniata are well set off against the pinnately parted leaves, merely acute or but slightly pointed teeth and bractlets, purple flowers, densely prickly fruit, and broadly concave centrally ridged seed-face of S. bipinnatifida. Nevin and Lyon, in their exploration of San Clemente Island (off S. California), collected S. laciniata with pedicelled fruit, but in every other respect perfectly typical.

**Sanicula Howellii,** n. sp. Stems coarse, a foot or less high, more or less buried in the sand, bearing tufts of stout, elongated peduncles and leaves: leaves broad and palmately 3-lobed (often much modified by burial in the sand), the divisions rather sharply cut and toothed, the teeth mucronate-tipped: umbels unequally few-rayed, with involucre of a few leaf-like bracts, and involucels of very conspicuous bractlets, sometimes much exceeding the large globose heads of fruit: flowers yellow: fruit short-pedicellate, prickly all over, 1½ to 2 lines long; oil-tubes irregular in number and distribution; seed-face concave.—Sandy shores, Tilamook Bay and Ocean Beach, Oregon, July 15, 1882 (*Howell* 16, *Henderson* 1584); also on Beacon Hill, Victoria, Vancouver Island, May 5, 1887 (*Macoun* 5). This sea-coast species is most nearly related to *S. arctopoides* H. & A., but the habitat of that species, its almost stemless habit, its leaves so laciniately dissected as to appear fringed, its fruit naked at base, and its nearly plane seed-face, are the more marked characters which serve to distinguish it from *S. Howellii*.

**Phellopterus littoralis** Schmidt, that curious sea-shore species, so much resembling Cymopterus in fruit, has had its range extended beyond the Oregon shores, where it has been collected by Cooper, Howell and Henderson, having been discovered by Professor Macoun in Vancouver Island in 1887.

**Pimpinella apiodora** Gray, of the Pacific slope, is a great desideratum in herbaria. It seems to be widely distributed enough, but very rarely collected. Specimens of it are very much desired by the writers.

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## Notes on Carex. IX.

L. H. BAILEY.

**1. Carex pansa.** One of the *Multifloræ:* extensively creeping by a woody horizontal rootstock 2 to 4 inches deep: culm scabrous above, stiff and erect or nearly so, about a foot high, exceeding the narrow long-pointed stiff and tufted leaves: spikes 6 to 10, ovoid, less than half inch long, dark brown or nearly black when mature, aggregated into an oblong or ovoid loose head an inch or less long: scales thin, very broadly ovate, dark brown with a broad white-hyaline margin, sharply acute or acuminate: perigynium ovate, flat and nerveless on the inner face, rounded and obscurely few-nerved or nerveless on the outer face, contracted into a short but distinct and slender nearly entire beak, becoming nearly black, completely hidden by the scale.—"Very abundant in drifting sand as well as borders of sea estuaries, Clatsop, Oregon, and Ilwaco, Washington Territory," *L. F. Henderson.*—This should be no. 237*a* in my Synopsis; intermediate between the *Multifloræ* and *Fœtidæ*.

**2. C. ablata.**—*C. frigida* of American botanists, not Allioni.—There has always been a doubt as to the proper disposition of the American plant which has been called *C. frigida* All. Mr. Olney first referred it to *C. sempervirens* Vill., which it very much resembles, but from which it is distinguished, among other things, by the notched orifice of the perigynium. The accumulation of considerable material from our western territory, and a fine suite of European specimens obtained through the courtesy of Dr. Christ, of Basel, have enabled me to determine the fact, which I have always suspected, that the American plant is not the same as the European. C. ablata, as I designate the American species, is distinguished from C. frigida chiefly as follows: Culm stiffer and more erect: leaves broader and firmer, usually shining, commonly shorter: staminate spike smaller, nearly sessile: pistillate spikes shorter and thinner, lighter colored, shorter stalked, the upper 2 or 3 usually aggregated and sessile or very nearly so: scales obtuse, usually shorter: perigynium not so long and slender-beaked.

**3. C. grisea** Wahl., emend.—This species presents three well marked forms: the type, a robust leafy plant with large

inflated perigynia, occurring in the most northern states; a more slender form with slimmer pointed perigynia, growing in the middle and southern states; a depauperate form with very short perigynia, found in the southwest. The following characters distinguish these plants:

*Type:* Stout, leaves broad (¼ inch wide usually): bracts broad and leaf-like, diverging, very much exceeding the culm: spikes heavy: perigynia much inflated, blunt: scale nerved below, cuspidate or muticous, all except the lowest ones shorter than the perigynium. Boott, t. 86.—New England to Michigan and Illinois, and Pennsylvania.

Var. **angustifolia** Boott, Ill. 34, t. 87.—*C. laxiflora* Ell. Sk. Bot. Car. ii, 549. *C. grisea* var. *minor* Olney, Hall's Pl. Tex. 25.—Much more slender, the culms usually weak: leaves scarcely half so wide as in the species, the bracts especially much narrower and shorter, more erect: spikes more slender, appearing two-ranked (in dried specimens at least): perigynium scarcely inflated, trigonous-oblong, bearing a sharp beak-like point: scale nerveless or very nearly so, longer, sharper, and more spreading than in the species.—Southern Ohio, Pennsylvania and New Jersey, southward to Florida and Texas. Common in the middle states. The variety, as outlined here, includes somewhat more than Dr. Boott evidently intended to designate, but there are no characters, so far as I know, which separate the extreme southern very narrow-leaved form from the plants of the central states. It is still a question as to the relationship of this variety with *Carex oligocarpa* Schk.

Var. **globosa.** Usually low (three to eight inches high, varying to over a foot in the more developed forms): spikes few-flowered (often containing only two or three perigynia): perigynium short, inflated, very blunt, nearly globose or somewhat obovate: scales short, not conspicuously cuspidate, or the upper ones wholly muticous.—St. Louis, Mo., *Eggert*, Arkansas, *Hasse* (specimens somewhat intermediate between this and var. angustifolia), Texas, *Neally*.

**4. Carex flava** Linn., emend.—Carex flava is a puzzling species. It varies towards *C. Œderi* Retz, a species which may not be distinct. Yet there appears to be a satisfactory line of demarcation between the two, and a greater accumulation of confusing material must come in before their union can be justified. The essential characters of typical C. flava

are: Plant one to two feet high, having a peculiar yellowish cast which extends to the perigynia: leaves shorter than the culm: bracts long, conspicuously spreading, the lowest much longer than the remaining portion of the culm: spikes borne close together near the top of the culm, sessile (the lowest rarely short-stalked): perigynium bearing a long and slender beak which is very conspicuously reflexed. The essential contrasting characters of C. Œderi are: Plant smaller, greener: leaves equaling or exceeding the culm: bracts strictly erect: spikes much smaller and much more closely aggregated: perigynium conspicuously smaller, the beak short and straight. The spikes often have a whitish cast. C. flava presents two marked varieties. From the type of C. flava, as characterized above, its varieties may be separated as follows:

Var. **recterostrata.** Plant less yellow, or entirely green: spikes more scattered, the lowest two or three inches remote and usually conspicuously stalked: beak shorter, straight or nearly so.—Vancouver Island, *Macoun*, and possibly across the continent. *C. viridula* Boott, Ill. t. 523, may possibly belong here, judging from the spreading bracts, although the perigynia are rather those of C. Œderi. There are no descriptive notes on this plant in the text, but it is said to be figured from Massachusetts specimens. In my own herbarium there are no specimens of this anomalous variety from the eastern states, but specimens which I have seen elsewhere, as I recall them, are probably to be referred here. The plant is not much smaller than the type.

Var. **minor** Townsend, Journ. Bot. xix, 161. Much lower than the species, eight inches or less high, green: leaves proportionately broader, as long as or longer than the culm, which is often not erect: spikes more or less scattered, almost entirely lacking the yellow color of those of the type, the lower one or two conspicuously stalked: beak shorter, straight.—Atco, N. Jersey, *I. C. Martindale*. Introduced? Common in England.

**5. Carex aperta** Boott, emend.—This species was founded upon plants collected by Scouler and Douglas on the Columbia river. The author erected a var. $\beta$ at the same time that he proposed the species. This variety, founded upon specimens from the far north, was afterwards (Ill. 182) referred by its author to *C. cæspitosa* var. *filifolia* Boott. In the mean

time he had made another var. β (Ill. 132, t. 426), founded upon plants from the eastern United States. This latter variety has ever since been regarded as *C. aperta* Boott, in Gray's Manual and elsewhere, except in the instance of Olney's fascicles, where it was designated as *C. aperta* var. *minor* Olney. As none of the recent collections from Oregon or Washington contain specimens which could be confidently referred to C. aperta, the species has held its place in our eastern flora through sufferance. A recent careful examination of one of Scouler's specimens, which is deposited in herb. Gray, reveals the fact that it is the same as the plant now provisionally known in this country as *C. acuta* var. *prolixa* Hornem. The specimen appears to have been one of the more slender plants of the original collections, judging from the figure in Hook. Fl. Bor.-Am., which figure well represents the robust forms of C. acuta var. prolixa. The plant of the eastern states can not be considered as belonging to the original C. aperta, and I therefore separate it as

**C. stricta** Lam., var. **decora.**—*C. aperta*, authors, not Boott. *C. aperta* Boott, β, in part, Ill. 132, t. 426. *C. Haydenii* Dew. Sill. Journ. 3d ser. xviii, 103, probably. *C. aperta* var. *minor* Olney, Exsicc. fasc. v. no. 15.—Usually smaller and more slender than the species, the basal sheaths not fibrillose: spikes short (seldom over an inch long), sessile or very nearly so, only very rarely attenuated at the base, spreading, the terminal staminate flowers few: bracts usually conspicuously spreading: scales very sharp, spreading, longer than the perigynium.—From New England to Illinois and Wisconsin; evidently also in Nebraska, Oregon and Washington. Apparently rare.

**6. Carex canescens** Linn., emend.—There are three marked types of variation in Carex canescens: (1) A slender and reduced form of the species, very common throughout the northern states; (2) a dwarf series with brown or fulvous spikes, subalpine or alpine; (3) a robust and very leafy form in which the spikes are aggregated into a head, the perigynia long-pointed. Singularly enough, the first form has never had a name, although it has passed as var. vitilis and var. alpicola, unless Læstadius' var. subloliacea may be applied to it. It is very doubtful, however, if this var. subloliacea can be legitimately pressed into service for our American plant. Andersson's account of it extends no farther than the fruit and spikes—"spiculis parvis, subglobosis,

remotioribus, fructibus margine sublævibus "—and Boott says that it differs from the species only in the small spikes and the smooth perigynium. Boott knew it only as a Lapland plant. Moreover, the very few specimens to which I have had access differ from the species only in the points designated. Our plants, on the contrary, differ from the species in their very slender and lax habit as well as in the characters of perigynium and spikes. I have therefore separated them from the species as an unpublished variety. The second series of variations may all be included under var. *alpicola* Wahl., with the exception of the dubious var. *dubia* Bailey, and the third under var. *polystachya* Boott.

Var. **vulgaris.**—Var. *alpicola* Bailey in part, Proc. Am. Acad. xxii, 143; distrib. Carices, 1886.—Differs from the species in its more slender culm and laxer habit, its small spikes, and usually smaller and spreading perigynia. This variety bears the same relation to C. canescens that var. microstachya bears to C. echinata. Typical C. canescens is a stout plant, with compact spikes one-fourth or three-eighths inch long. Both the species and this variety are characterized by a silvery color of the spikes.—Common throughout the northern states and Canada, to Idaho, and perhaps farther westward.

Var. **alpicola** Wahl. Fl. Lapp. 232.—*C. curta*, var. *brunnescens*, Pers. Syn. ii, 539; *C. Richardii* Michx. Fl. Bor., Am. ii, 170; *C. vitilis* Fries, Mant. iii, 137; *C. canescens*, β Torr. Monogr. 393; *C. canescens* var. *sphærostachya* Tuckm. Enum. Meth. 10, 19; *C. Buckleyi* Dew. Sill. Journ. 1st ser. xlviii-143; *C. sphærostachya* Dew. l. c. xlix, 44; *C. canescens* var. *vitilis* Carey, Gray's Man., 2d ed., 514; *C. canescens* var. *brunnescens* Boott, Ill., 220; *C. vitilis* var. *brunnea* Olney, Bot. King's Rep., 364; *C. vitilis* vars. *alpicola* and *sphærostachya* Olney, Exsicc. fasc. v. nos. 3 and 4.—Smaller than the species (seldom much over a foot high), the culm stiff in the alpine forms, more or less slender in the subalpine forms: spikes small and globular or nearly so, well defined, brown or tawny. Varies from the short, stiff and brown alpine forms—the typical var. alpicola—into various lax and paler forms of intermediate regions.—Common on mountains across the continent, reaching as far south as Georgia, and occurring sparingly in intermediate regions along the northern borders of the United States.

7. **C. Deweyana** Schw., var. **sparsiflora.**—*C. Bolanderi* var. *sparsiflora* Olney, Proc. Am. Acad. 1872, 407 (Hall's no. 589).—The most reduced form of C. Deweyana: plant laxer in habit than the type: leaves narrower: spikes smaller: perigynium twice smaller, more or less excurved. This is commonly confounded with forms of C. canescens, with which it was united in my Synopsis, 144. From the small forms of C. canescens this plant is distinguished by its much laxer habit, broader and soft leaves, the culm very weak or often zigzag above, the perigynia much narrower, longer (lanceolate or narrowly ovate-lanceolate), long-pointed, more or less excurved, borne in loose spikes which are generally subtended by a bract.—From Idaho to Oregon and Vancouver Island. *C. Bolanderi* vars. *elongata* and *minor* Olney, l. c., are unimportant forms of *C. Deweyana* var. *Bolanderi* W. Boott.

8. **C. arctata** Boott, var. **Faxoni.**—Spikes shorter than in the species, usually short-peduncled, erect or nearly so, much more densely flowered, part of them usually contiguous at the top of the culm, rendering the shorter staminate spike inconspicuous: perigynium usually much larger.—Sugar Hill, Lisbon, N. H., *Edwin Faxon*, 1887; extreme northern Minnesota, *Bailey*, 1886; northwestern Ontario at Nipigon, *Macoun*, 1884, and Michipicoton, *Geo. Barnston*, 1860.

As Carex arctata is often confounded with C. debilis, it may be well at this place to state the essential points in which it differs from C. debilis: Radical leaves broader and shorter: perigynium shorter (2 lines or less long), abruptly contracted into a beak, abrupt and conspicuously stipitate below, more loosely disposed on the spike and more spreading, scarcely longer than the very sharp or cuspidate scale.

9. **C. rosea.** Schkuhr, var.? **Arkansana.** Differs from the species in its mostly stouter culm, the spikes much larger and more aggregated and subtended by very long (3 to 6 inches) leaf-like bracts with dilated bases, scales broader and conspicuously awn-pointed, perigynium much larger and broader.—Plentiful in the bottom of La Fourche creek, near Little Rock, Ark., growing beneath underbrush where heavy timber has been cut, *Dr. H. E. Hasse*. This plant suggests *C. Muhlenbergii* var. *australis*.

10. **Carex salina** Wahl., var.? **robusta.** Taller and coarser than the species (2 to 3 feet high), the culm spongy at

the base: leaves soft: bracts very leafy, surpassing the culm: spikes heavy, short and thick (an inch or less long usually and one-quarter or one-half inch thick), mostly dense and truncate at the base, somewhat aggregated, the lower short-stalked: scales various, from lanceolate and acute to ovate and obtuse, brown with a white nerve, longer than the thinner nerveless perigynium.—Salt marsh, Vancouver Island, 1887, *Macoun*. A singular plant with very bushy spikes, variable in character. The perigynia are all empty.

**11. Carex Liddoni** Boott, var. **incerta.**—*C. adusta* var. *congesta* W. Boott, Bot. Calif. ii, 238.—Usually lower than the species (about 18 inches high), the culm much more slender: leaves evidently proportionally longer (nearly as long as the culm): heads shorter (three-fourths inch or less long), much more dense: perigynium somewhat smaller, nerveless or very nearly so.—Summit Camp, California, *Kellogg*.

**12. C. Jamesoni** Boott, var. **gracilis.** Differs from the species in its much more slender and flexuose spikes, which are longer peduncled. *C. Jamesoni* β Boott, Ill. 109, t. 335.—The specimen figured and described by Boott is from northern South America. I refer here, with much uncertainty, two specimens collected in southern Mexico in 1853 by Fred. Müller, nos. 1,337 and 1,338. These specimens are much more slender than that figured by Boott, smaller (one and a half to two feet high), leaves narrower, the spikes fewer and rather more slender and the perigynium somewhat excurved. A larger suite of specimens is necessary for a close determination. Müller's 649 is *C. Jamesoni* Boott, t. 334, and no. 1,336 and part of 1,977, the latter from Orizaba, are C. Jamesoni γ, tt. 336 and 337. It seems to me that the var. γ should be referred to the type.

**13. Carex triceps** Michx., var. **Smithii** Porter in litt.—*C. Smithii* Porter; Olney, Exsicc. fasc. i. no 28.—More slender than the type: whole plant, except the sheaths, glabrous or nearly so: spikes smaller ($\frac{1}{2}$ in. or less long by $\frac{3}{16}$ in. wide), the lower one or two usually short-peduncled: perigynium mostly smaller: scales, especially of the staminate portion, commonly shorter, less squarrose and not so sharply pointed.—Southeastern Pennsylvania, southern New Jersey and southward.

**14. Carex lurida×retrorsa.** Distinguished from *C. lurida* Wahl., which parent it most closely resembles, by its straw-

colored perigynia, which are less inflated and much more spreading, standing at nearly right angles to the axis of the spike.—Lansing, Mich. A large clump of this Carex was found growing between clumps of C. lurida and C. retrorsa. Its habit and characters were such as to at once place its hybrid origin beyond a doubt. It also explains certain ambiguous specimens which have been sent me for name—I can not now recall from whom—and which I recollect to have referred to C. lurida. Without an intimate acquaintance with C. lurida this hybrid will not be readily recognized. It is very likely to be mistaken for C. tentaculata. It resembles very closely *C. tentaculata*×*lurida* Bailey (*C. tentaculata* var. *altior* Boott). Infertile.

*Agricultural College, Mich.*

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## The distribution of Isoetes.

LUCIEN M. UNDERWOOD.

The species of Isoetes have been neglected by collectors in many localities, so that our knowledge of their distribution is likely to be considerably modified by further discoveries. Forming, as they do, an inconspicuous element in aquatic vegetation and still more rarely seen in marshy places, they are easily passed by unless one is specially searching for them. Their resemblance to sterile aquatic sedges or Juncus increases the probability of their being overlooked. It may be of interest to note something of the distribution and history of our native species during the six years which have passed since the publication of Dr. Engelmann's valuable monograph[1], as well as to note some of the remarkable features of their distribution on other continents. The species were classed by Engelmann as "submerged," "amphibious" and "terrestrial." Baker[2] makes four groups to which similar terms are differently applied, his group "Aquaticæ" including only a part of Engelmann's "submerged" species, his group "Subaquaticæ" including the remainder, together with Engelmann's "amphibious" species, his group "Am-

[1] The genus Isoetes in North America. In Trans. *St. Louis Academy of Science* iv, 358–390 (1882).

[2] Fern Allies, p. 124 (1887).

phibiæ" including Engelmann's "terrestrial" species, while his group "Terrestres" is limited to two European species whose leaf bases are persistent. Baker enumerates forty-nine species; with two of Dr. Engelmann's species overlooked by him and the two species described below the number is brought up to fifty-three.

Geographically Isoetes has a peculiarly wide distribution; to illustrate its main features we will take the various regions of the world in order, commencing with Europe, where the genus was first known:

I. EUROPE.—The European species are thirteen in number, only excelled by our own continent. The species are as follows:[3]

*I. lacustris* L. (1)
*I. echinospora* Dur. (1)
*I. Azorica* Dur. (1)
*I. setacea* Bosc. (3)
*I. tenuissima* Boreau. (3)
*I. Boryana* Dur. (3)
*I. adspersa* A. Br. (3)
*I. Malinverniana* Ces. & DeNot. (3)
*I. velata* A. Br. (3)
*I. dubia* Gennari. (3)
*I. Tegulensis* Gennari. (3)
*I. hystrix* Bory. (4)
*I. Duriæi* Bory. (4)

Of the above, two species alone, I. lacustris and I. echinospora, are found in northern Europe, extending to the mountain regions of central Europe; both, moreover, are found with us. Three others, I. hystrix, I. Duriæi, I. velata, are widely distributed throughout the Mediterranean region from Spain and Algeria to Asia Minor, I. Azorica is confined to the Azores, I. dubia and I. Tegulensis to Sardinia and neighboring islands, I. Malinverniana to Piedmont, and the remaining species to France. In the minor distribution France leads with nine species, the island of Sardinia has five, while England and Sweden have only two each.[4]

II. AFRICA.—From Africa ten species have been reported:

*I. Peralderiana* Dur. & Let. (3)
*I. velata* A. Br. (3)
*I. adspersa* A. Br. (3)
*I. hystrix* Bory. (4)
*I. Duriæi* Bory. (4)
*I. Natalensis* Baker. (3)
*I. Welwitschii* A. Br. (3)
*I. Schweinfurthii* A. Br. (3)
*I. æquinoctialis* Welw. (3)
*I. nigritiana* A. Br. (3)

Of these, the first five are found only in Algeria, the first alone being peculiar to that country; the second is found

[3] The numbers following the species refer to Baker's groups in the order named above.

[4] I. hystrix is recorded from Guernsey, which is botanically a part of France, though politically of England.

also in France, and the remaining three belong to the Mediterranean region generally. The last five form the proper African flora, and are distributed from the Niger region to Natal. With such a wide distribution of the few known species it will be surprising if the interior of the Dark Continent does not yield a harvest of new forms.

III. Asia.—From Asia we have the smallest number from any continent except South America, which has the same number—six. Of these, only three are peculiar to Asia. The species are:

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|---|---|
| *I. velata* A. Br. (3) | *I. Olympica* A. Br. (3) |
| *I. hystrix* Bory. (4) | *I. Japonica* A. Br. (3) |
| *I. Durieui* Bory. (4) | *I. Coromandeliana* L. (3) |

The first three have already been discussed as Mediterranean; of the remainder, the first is from Asia Minor, the second from Japan, and the third from India; illustrating again the wide distribution of the genus.

IV. Australasia has eight species, as follows:

| | |
|---|---|
| *I. Gunnii* A. Br. (1) | *I. alpina* Kirk. (2) |
| *I. elatior* F. M. (1) | *I. Muelleri* A. Br. (2) |
| *I. Stuartii* A. Br. (1) | *I. Drummondii* A. Br. (2) |
| *I. Kirkii* A. Br. (2) | *I. tripus* A. Br. (3) |

Here again we have a singular example of wide distribution: the first three are from Tasmania, I. Kirkii and I. alpina are from New Zealand, I. Muelleri is from Queensland, and the last two are from West Australia.

V. South America.—From America south of the isthmus of Panama we have the six following species:

| | |
|---|---|
| *I. triquetra* A. Br. (1) | *I. Martii* A. Br. (3) |
| *I. Lechleri* Mett. (1) | *I. Amazonica* A. Br. (3) |
| *I. Savatieri* Franchet. (3) | *I. Gardeneriana* Kze. (3) |

Of these, the first two are from the high Andes of Peru, the third is from Patagonia, and the remainder are from Brazil.

VI. North America.—Coming lastly to our own country, we find the largest representation of Isoetes anywhere found. Nineteen species occur within the limits of North America, including a single species from the West Indies. Of these, only the first two are found elsewhere. Omitting varieties, we have:

*I. lacustris* L. (1)
*I. echinospora* Dur. (1)
*I. pygmæa* Engelm. (1)
*I. Bolanderi* Engelm. (2)
*I. Tuckermani* A. Br. (2)
*I. saccharata* Engelm. (2)
*I. riparia* Engelm (2)
*I. melanospora* Engelm. (2)
*I. Engelmanni* A. Br. (3)
*I. Howellii* Engelm. (3)
*I. nuda* Engelm. (3)
*I. flaccida* Shuttleworth. (3)
*I. Suksdorfii* Baker. (3)
*I. Cubana* Engelm. (3)
*I. Mexicana* n. sp. (3)
*I. melanopoda* J. Gay. (3)
*I. maritima* n. sp. (3)
*I. Butleri* Engelm. (3)
*I. Nuttallii* Engelm. (3)

The distribution of most of these species has been discussed by Dr. Engelmann, but as his paper may not be generally known a few details may be referred to here. Most of the above species have a comparatively narrow range. I. Tuckermani, I. saccharata and I. riparia are confined to the northeastern border; I. pygmæa, I. maritima, I. Howellii, I nuda, I. Nuttallii and I. Suksdorfii inhabit the Pacific border only; while Georgia with I. melanospora, Florida with I. flaccida, Cuba with I. Cubana, and Mexico with I. Mexicana, each yields a single species. On the other hand, I. Engelmanni ranges from New England to the Mississippi valley, and I. Butleri and I. melanopoda inhabit the interior, the former ranging from Tennessee to the Indian Territory, and the latter from Illinois to Texas. As I. lacustris and I. echinospora doubtless range over most of the northern half of the continent, the latter extending even to Greenland, a wider distribution of a genus could scarcely be imagined. Turning to individual states, we find a remarkable paucity of species everywhere. The published state lists consulted give species rarely and in many instances add the significant "rare" or "local" to the species given. Of ten state and local floras examined at random from our numerous publications of that character, one, that of Missouri (*Tracy*), gives two species; three, Iowa (*Arthur*), Illinois (*Patterson*) and Ohio (*Beardslee*), give one each; while the other six, North Carolina (*Curtiss*), Minnesota (*Upham*), Michigan (*Wheeler* and *Smith*), Wisconsin (*Lapham*), Indiana (*Coulter* and *Barnes*) and Washington (*Ward*) do not record a single species. Massachusetts, however, has five species, Pennsylvania and New Jersey four each, and New York, California and Oregon three each.[5] Dr. Engelmann's first prophecy, that other species "are expected to be found when the attention of collectors is more earnestly directed to them," finds a double fulfillment in the efforts of two veteran collectors,

[5] *Cf.* Engelmann, *loc. cit.*, p. 376.

Pringle in Mexico, and Macoun in Vancouver Island. His second prophecy, that "some of the apparently local species will yet be found in a more extended area," depends largely on the activity of collectors in the field.

Some general conclusions may be drawn from the above notes on geographic distribution:

1. The genus Isoetes has a world-wide distribution, being represented not only on every continent, but in almost every part of every continent.

2. While the range of the genus is world-wide, the range of most of the species is remarkably narrow. Excepting the two boreal species, I. lacustris and I. echinospora, and the three Mediterranean species, I. velata, I. hystrix and I. Duriæi, the remaining species are largely local, many being known from a single locality.

3. France for Europe and Massachusetts for America present the largest number of species and varieties, owing, doubtless, to the fact that their collectors have been more active and watchful for these inconspicuous plants.

4. No center of distribution seems apparent; we are unable to assign headquarters for the genus.

5. As we approach tropical regions from both north and south we find a decrease of aquatic and subaquatic forms and a corresponding growth of amphibious, pseudo-terrestrial and terrestrial forms.[6]

6. Probabilities derived from a study of distribution point not only toward a much wider range for individual species, but also to the discovery of many more species as collectors turn their attention to them.

7. As is true of numerous other aquatic plants, waterfowl have doubtless been responsible for the wide distribution of certain species, notably I. lacustris and I. echinospora, which, no doubt, encircle the northern hemisphere.

We add the descriptions of two new species:

**Isoetes Mexicana.** Amphibious: rootstock two-lobed: leaves 20–30, bright green, 12–22 cm. long; stomata numerous: sporangia oval, 5 mm. long, 3 mm. wide, delicate, unspotted; velum very narrow, almost wanting: ligule triangular, two-thirds as long as the sporangium: macrospores chalky-white, 0.25–0.375 mm. thick, nearly smooth, the three converging ridges in strong relief: microspores slate-colored, 0.028–0.033 mm. thick, mostly smooth.

[6] It should be noted that the two apparent exceptions to this law, I. triquetra and I. Lechleri, though found in equatorial regions, are both high mountain forms.

Slow streams, base of Sierra Madre, state of Chihuahua, Mexico, October, 1887 (*C. G. Pringle*, no. 1447).

This species is the first that has yet appeared within the limits of Mexico. Mr. Pringle writes: "The Isoetes was found in several different stations, in the shallows of slow rills of the sandy plains about the continental divide, at an elevation of 6,000 to 7,000 feet, and growing as well in the wet sand as in the bottom of pools. Its leaves—what the specimens scarcely show since they were dried—were sinuous and channeled above."

**Isoetes maritima.** Amphibious or mostly terrestrial: rootstock small, only slightly bilobed: leaves 8–15, rigid, green, 2–5 cm. long, 1.5 mm. wide with abundant stomata: sporangia oval 4 mm. long, 2.5 mm. wide, brownish-white, covered one-third to one-half by the velum: ligule small, inconspicuous: macrospores 0.42–0.48 mm. thick, densely spinulose, the spines somewhat blunt, but rarely confluent: microspores white, smooth, 0.032–0.035 mm. thick.

Salt marsh, Alberni, Vancouver Island, August, 1887 (*J. Macoun*).[7]

This species, next to I. pygmæa, is the smallest of our flora; it differs from all our other pseudo-terrestrial species except I. Nuttallii in being monœcious as well as by other marked characters; from I. Nuttallii it differs by its size, its partial velum and the sculpture of its spores.

*Syracuse, N. Y.*

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## BRIEFER ARTICLES.

**Lichens from the Easter Islands.**—During the year 1885 the United States steamer "Mohican," commanded by Lt. B. F. Day, stopped for some time at these isolated islands for the purpose of procuring some of the famous stone idols which were left by the aborigines. Several fine examples were obtained, and are now on exhibition in the United States National Museum. When these images arrived they were thickly covered with a growth of lichens and a single species of moss. Mr. Henry Willey kindly determined the lichens as closely as their fragmentary condition would permit, finding *Usnea barbata* (L.) Fr., *Physcia stellaris* L., and a sterile Parmelia nearest to *Parmelia lævigata* (Sm.) Nyl. The

[7] With this species Prof. Macoun sends from his collection in Vancouver Island I. Nuttallii, extending the range of that species northward from Oregon, and two forms which I have referred provisionally to I. echinospora, though both differ somewhat from any described form of that species. The habits of the two were different, one coming from fresh water (Sproat Lake) and the other "between tides, in flowing water."

moss is without fruit, but seems to be a species of Hypnum.—F. H. KNOWLTON, *U. S. National Museum.*

**Notes on some Illinois grapes.**—The following notes were made upon the grapes of Wabash county, Illinois:

1. *Vitis palmata* Vahl. In bloom, July 1 to 10; fruit ripe, after October 1; odor, delicately fragrant; habitat, borders of muddy ponds in bottom lands. Berries have a pleasant taste; not so sour as either of our other wild grapes. Cultivation might produce a valuable fruit. The largest vine I have seen is 1½ inches in diameter, ascending a tree 18 feet. It usually forms large dense mats over the tops of low bushes and sedges etc. Its common associates are Cephalanthus occidentalis, Populus heterophylla, Gleditschia monosperma, etc. Peduncles sometimes 6 inches long; often throwing themselves around twigs, thus serving as tendrils.

2. *V. riparia* Michx. In bloom, May 10 to 20; fruit ripe, July 10 to 30; odor, slightly fragrant; habitat, along banks of large streams in bottom lands. Vine seldom 3 inches in diameter; straggling over small trees, forming dense overhanging canopies; rarely rising above 50 feet.

3. *V. cordifolia* Michx. In bloom, May 25 to June 10; fruit ripe, after October 1; odor, very fragrant; habitat, throughout river bottoms. This is our largest grape-vine. I have found it 6 inches in diameter, and ascending more than 125 feet.

4. *V. cinerea* Engelm. In bloom, June 15 to 30; fruit ripe, after September 15; odor, delicately fragrant; habitat, along small streams in uplands and barrens. It is very close to V. æstivalis; the foliage of the two can not, in many cases, be distinguished; but the difference in the time at which the flowering and ripening of fruit occur in the two species, together with the long lax bunches, smaller and bloomless berries of V. cinerea, makes a plain, specific distinction between these two plants.

5. *V. æstivalis* Michx. In bloom, June 8 to 20; fruit ripe, after September 1; odor, mildly fragrant; habitat, uplands and barrens.

6. *V. indivisa* Willd. In bloom, June 18 to 28; fruit ripe, after October 1; odor, unpleasant; habitat, throughout river bottoms.—J. SCHNECK, *Mt. Carmel, Ills.*

**Prunus pumila in North Carolina.**—In "Gray's Manual" it is stated that the range of this species of Prunus is from "Massachusetts northward to Wisconsin, and south to Virginia along the mountains." It is not mentioned in Chapman's "Flora of the Southern United States," nor in the Rev. M. A. Curtis' "Catalogue of the Indigenous and Naturalized Plants of the State of North Carolina." I have, however, found it growing luxuriantly and in quantities on rocks in Henderson county. This county is situated in the alpine region of North Carolina, and from its altitude its flora resembles, in many respects, the flora of a higher latitude. A specimen of the Prunus pumila found in this locality was sent to Dr. N. L. Britton, of Columbia College, N. Y., for comparison with

the specimens in the college herbarium. Upon making the comparison he writes: "The Prunus pumila sent I can not distinguish from northern specimens, New York and New Jersey."—EDWARD READ MEMMINGER, *Flat Rock, N. C.*

**Synopsis of the genus Panicum** Linn.—The species of the United States may be divided into the following sections:

Section I. DIGITARIA. Panicles of several spikes or spike-like branches, which are digitate or approximate at the top of the culm: spikelets usually small and in alternate pairs along one side of the flattened rhachis, one sessile and one shortly pedicelled; empty glumes 2, or sometimes 3, the lower one then being minute.

Species 4.

Section II. TRICHACHNE. Spikelets densely silky-hairy, or fringed with long hairs, sessile or shortly pedicelled, in pairs or clustered along the rhachis of the numerous simple spikes or branches of the panicle, acute; lower glume minute.

*PP. leucophæum* HBK., *lachnanthum* Torr.

Section III. BRACHIARIA. Panicle subspicate or with several short sessile simple branches: spikelets sessile or subsessile.

**1.** *Paspaloidea.* Panicle of few (3 to 6) simple, mostly sessile, spreading branches, the spikelets sessile in two rows on one side of a flattened rhachis, as in Paspalum, but with a small lower glume.

*PP. platyphyllum* Munro, *plantagineum* Link.

**2.** *Subspicata.* Panicle linear or narrow, the branches short, sessile, erect or appressed, or the apex spicate.

*Branches densely flowered.

*PP. paspaloides, Curtisii, obtusum, reticulatum, Texanum.*

**Branches lax flowered.

*PP. Chapmani, Reverchoni, subspicatum, stenodes.*

**3.** *Approximata.* Branches erect or somewhat spreading (not appressed), mostly approximate.

*PP. prostratum, cæspitosum, fasciculatum, grossarium.*

**4.** *Polystachya.* Branches of the panicle numerous, spreading, single or subfasciculate, simple or with short branchlets at the base: spikelets sessile.

*PP. pilosum, laxum, barbinode,* and small forms of *anceps.*

Section IV. EUPANICUM. Branches of the panicle more or less subdivided, single or fascicled, usually spreading and naked below; spikelets subsessile or pedicelled, sometimes glomerate.

. Panicle narrow, depauperate; branches few, erect.

*PP. xanthophysum, depauperatum, angustifolium* Chapm.

**2.** Panicle small but diffuse, branches rather few-flowered and short.

*PP. scoparium, consanguineum, laxiflorum, dichotomum,* and related forms.

**3.** Panicle small or large, branches long: spikelets scattered or glomerate.

*PP. gymnocarpon, hians, barbinode, laxum.*

**4.** Panicle larger, branches subdivided: spikelets pedicelled.

*PP. latifolium, clandestinum, viscidum, scabriusculum, commutatum, Nealleyi, microcarpon* and var.

Panicle effuse, branches capillary and much subdivided.

*PP. capillare, proliferum, Hallii, autumnale, Buckleyi, miliacea, verrucosum.*

. Tall grasses, with ample and diffuse panicle.

*PP. anceps, agrostoides, virgatum, amarum, maximum, bulbosum, avenaceum, Havardii.*

**7.** Frutescent: spikelets large and turgid; empty glumes loose.

*P. divaricatum* Linn.

**8.** Panicle diffuse: spikelets large; the glumes very silky-villose.

*P. Urvilleanum* Kth.—DR. GEORGE VASEY, *Washington, D. C.*

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## EDITORIAL.

WHAT are the duties of the new experiment stations established at the state agricultural colleges by the national government, and recently made operative by congressional appropriation? The stations have two functions, as laid down by the law—"acquiring and diffusing" knowledge—and it is well to notice the significant order in which they are mentioned. The second section of the act specifies in what lines acquisition may be made, and it is our present purpose only to call attention to that part which relates to the study of plants. "It shall be the object and duty of said experiment stations," so the law reads, "to conduct original researches or verify experiments on the physiology of plants and animals, the diseases to which they are severally subject, with remedies for the same," etc. It can not be wholly accidental that the important subject of vegetable physiology, a subject in which barely a trace of experimental work has yet been done in this country, was placed first in the enumeration. Then comes pathology of plants, in which some progress has been made by American students, both being coupled with similar investigations for animals. Few indications more clearly show the rapid advancement of botany in public estimation than this prominence of the subject in a legislative movement for the improvement of a great industry. Indeed, the law gives more latitude for botanical work than appears at first sight. Of the ten specifically mentioned subjects for investigation, nine give the opportunity for a well educated botanist of the modern school to do good and lasting work, the only non-botanical subject being "the analysis of soils and water," although if hard driven

we might insist that nothing prevents interpreting this to mean not only chemical but biological analysis. Thus, the law permits and makes prominent mention of the study of plants in their manifold relations to economic problems, and it remains to be seen if those who carry out its provisions will act as wisely in this regard as the framers of the law have done. No station can give facilities for the pursuance of every line of work contemplated by the law, and those that do a few things well are likely to work more good for the country and bring more credit to themselves than those that scatter their resources among many subjects. Of the things to be done well, the broad and fertile fields of vegetable physiology, pathology and bacteriology offer great expectations of economic and scientific gain to the stations and men who enter them fully equipped for research, and through them to the people at large.

## OPEN LETTERS.

### Typha.

I am surprised that Mr. Morong, in his interesting article on Typha, in the *Bull. Tor. Bot. Club*, p. 4, 1888, does not mention, under the heading of *uses*, the use of the leaves of these plants in cooperage. In some localities the collecting of these leaves is quite an industry. They are collected, dried in the shade, bound into bundles, and sent to market. When used they are split in halves through the broad diameter, and placed between the joints of headings, and of the staves near the headings. I find, on inquiry, that this is the almost universal method for making tight-work, not only in this country but also in Europe. J. SCHNECK.

*Mt. Carmel, Ill.*

### An odd fuchsia.

A malformed fuchsia which came under my notice a few days ago has five stamens, two of which have become adnate to the pistil. The petals are purple, five in number, and apparently normal. The calyx consists of five sepals, and what is the limb in the normal flower has partially grown together. Fast to this limb, by one edge, have grown two bodies, apparently bracts. In each one the side which adheres is red, like the calyx, while the free half is green and sparingly serrate. At first I thought these bodies were sepals, but as they could be traced to the pedicel of the flower by a prominent line or ridge, I concluded them to be bracts. W. A. PUCHNER.

*Chicago, Ill.*

### Fragrance of flowers.

In regard to the effects of the fragrance of certain flowers upon certain people, of which I have observed several communications in the GAZETTE, I have never been able to sit in a room where lilacs form a bouquet, nor could I ever examine the flowers of the common milkweed, which grows so plentifully along the country roadsides. I have tried

many times when a young girl student, and in mature life, endeavoring to persuade myself that I could if I would, but the odor of both lilac and milkweed seems to place a band about my head, which, as regards the lilac, is bearable to a certain limit of politeness, if I am a guest in a house; but the effect of the milkweed is so intensified that I think I should lose consciousness if I persisted long in the inhalation. JULIA S. HOAG.

*Albany, N. Y.*

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**Revision of N. Am. species of Fissidens.**

On comparing the measurements of leaf-cells and spores in the species treated in my paper (this journal xii, 1887, p. 1) with those recently given by Limpricht,[1] I found mine so uniformly in excess that I was lead to re-examine the matter. As this remeasurement led to the same result as at first, I turned to a verification of the value assigned to the divisions of the eye-piece micrometer used. This value I found had been erroneously determined, being twenty-five per cent. greater than it should be. Those who have occasion to use these measurements are, therefore, requested to deduct one-fourth from them, *e. g.*, 20$\mu$ should read 15$\mu$; 24$\mu$ should be 18$\mu$, and so on. C. R. BARNES.

*Madison, Wis., March* 1, 1888.

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**An exchange herbarium.**

An ideal botanical exchange is one through which one can obtain at any time any plant desired. At the New York meeting of the A. A. A S. the Botanical Club appointed a committee, consisting of Dr. Geo. Vasey, Dr. N. L. Britton, Thomas Morong, Dr. S. Watson and Dr. B. D. Halsted, to consider the question of a botanical exchange for this country, and to organize one if thought desirable and practicable. Suggestions from each member of the committee have been secured, as well as from other botanists, and information has been obtained in regard to the Botanical Exchange Club of the British Islands. Direct information regarding a very successful German botanical exchange has for some reason failed to reach the committee, but some account of its methods of work has been learned from persons in this country who have obtained plants through it. An account of the workings of the British Exchange, together with suggestions for the management of one in this country, is given in the February numbers of the *Torrey Bulletin* and BOTANICAL GAZETTE

There is a desire on the part of many that the exchange be located at Washington. The botanist of the Department of Agriculture has, therefore, consented to manage the exchange if so desired, and the Commissioner of Agriculture has granted space in the department building for the purposes of the exchange, and authorized the use of the duplicates belonging to the department herbarium. If the proposed exchange is organized on this basis, it will be practically an extension of the system of distribution heretofore carried on by the Department of Agriculture, and its management under special rules. In this case there would be no fees, and the interchange of specimens would be made through the mails free of postage. Persons desiring specimens could therefore be expected to contribute a liberal number in exchange for those desired, and thus quickly establish a stock from which nearly everything called for could

[1] Die Laubmoose (Rabenh. Krypt.-Flora), p. 427 et seq.

be furnished. The stock of duplicates belonging to the Department of Agriculture has during the past winter been labeled and arranged in botanical order, and now represents nearly 1,000 genera, being especially full in grasses and plants of the southwest.

Many names are being received of persons desiring to join an exchange. To these and others the rules will be sent when the exchange is organized. Persons interested are requested to correspond with the chairman of the committee, Dr. George Vasey, Department of Agriculture, Washington, D. C. A. A. CROZIER.

*Washington, D. C.*

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### Alexipharmics.

When reading the article on alexipharmics, or snake-bite antidotes, in the recent number of the *Annals of Botany*, I felt a little surprise at the small number of plants mentioned. I had a vague notion that the list of American species of reputed potency might be increased. This led me to make out, as near as I could recall them, a list of such plants as had some reference to snakes in their names. I am surprised to find in my private library (I have not consulted the large college collection) how little reference there is to the origin of the names. In many cases I am in doubt whether the title has reference to medicinal qualities or external resemblances. Even Darlington and Wood, usually rather expansive on such matters, are singularly silent. Down south, where, it is said, the natives hunt all day for a snake in order to take the remedial tincture there may be more knowledge on the subject. Here is the list for what it is worth:

Actæa spicata, both varieties, snake-root; Eryngium yuccæfolium, rattlesnake master; Sanicula Canadensis, black snakeroot; Eupatorium ageratoides, white snakeroot; Liatris, various species, button snakeroot; Hieracium venosum, rattlesnake-weed; Asarum Canadense, Canada snakeroot; Aristolochia serpentaria, Virginia snakeroot; Goodyera, two species, rattlesnake-plantain; Glyceria Canadensis, rattlesnake-grass; Botrychium Virginicum, rattlesnake-fern.

In Lindley's Medical Botany (1838) the name "rattlesnake-master" is applied to Liatris squarrosa, with the note that it is so called in the southern part of America, and "in case of being bitten by this animal (the rattlesnake) they bruise the roots and apply them to the wound, while at the same time the patient drinks a decoction of it in milk." He speaks of three species of Mikania so employed, but ours is not among them. Has it value?

In regard to Aristolochia serpentaria, Flückiger and Hanbury say, "Its ancient reputation for the cure of snake-bites is now disregarded."

I think it would be interesting to more than myself if some competent person would give us an authentic list of all reputed alexipharmics, and also what is known of the origin of such ophidian names as the above.

*Brown University, Providence, R. I.* W. WHITMAN BAILEY.

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### Strawberry poisoning.

In response to my note upon this subject in the January GAZETTE, I have received a communication from Dr. C. F. Millspaugh, of Waverly, N. Y., calling my attention to a number of cases similar to those recorded by myself, which had already been observed and published. The earliest

of these cases is attributed to Linnæus, 1757, who mentions in an essay upon the strawberry the poisonous effects of the fruit, and states the chief symptom to be an eruption of the skin. Four other cases of the kind are recorded by later European writers. In all the common symptom is an eruption of the skin with a greater or less swelling of the body; but the cases differ quite materially in other respects, especially as regards the severity of the attack and the suffering of the patient. All of these foreign cases, I believe, are recorded in Allen's Encyclopedia of Pure Materia Medica. On this side of the Atlantic the only case recorded previous to those mentioned by myself, so far as I know, is a very interesting one which came under Dr. Millspaugh's personal observation in his own practice, and is noted in Millspaugh's American Medicinal Plants, Fascicle III, p. 55.

One very important difference between the six cases here alluded to and those mentioned by myself in the January GAZETTE is worthy of special note, namely, that whereas in the former, so far as stated, the poisoning always resulted from eating the fruit, in the latter the mere inhalation of the odor of the ripe fruit might, and in many instances did, cause the poisoning, without tasting or even seeing the fruit itself.

*Cornell University.* A. N. PRENTISS.

In the BOTANICAL GAZETTE of January, 1888, Prof. A. N. Prentiss, of Cornell University, refers to two interesting cases of strawberry poisoning, and states that they are the only instances of which he has ever known.

Since this particular idiosyncrasy is so rare, I will furnish additional testimony in regard to a cousin of mine, formerly resident in Glens Falls, N. Y., now deceased. She had never manifested fondness for strawberries, but when about four years of age she was urged to eat some, and soon after became violently ill, the illness assuming the form of deathly stupor. Two physicians were hastily summoned, who concurred in pronouncing it a case of vegetable poison. One of them went out into the garden to find what there was to tempt the child, and, returning, said he saw nothing there but strawberries which would produce such results, and they were poisonous to his wife. The other physician said the symptoms were those described in medical books as resultant from eating that fruit, but he had never met with a case in his practice before. The conclusion was reached that the child was the victim of the strawberries of which she had been urged to partake. She naturally refrained from their use afterward, but I remember her mention of a brief but severe sickness once afterward from eating some cream which had been thrown over strawberries. Her sister informs me that later in life she would occasionally taste them without experiencing ill effects. JULIA S. HOAG.

*Albany, N. Y.*

## CURRENT LITERATURE.

### A manual of the British Discomycetes.[1]

This is the title of a book of over 400 pages, giving descriptions, synonyms and bibliographic and exsiccatæ references for all the fungi be-

[1] PHILLIPS, WILLIAM.—A manual of the British Discomycetes. International Scientific Series, Vol. LXI. 410 pp., 12 plates, 8 vo.

longing to this family and hitherto found in Britain. Its design is, in the words of its author, "to provide the English student with the means of acquiring a knowledge of the Discomycetes of Britain." But it will be found scarcely less useful to American students, since a very large number of the species described in it occur in this country also. In it are descriptions of nine orders, forty-nine genera, and about 600 species. The descriptions happily include the spore characters, and they are also made more complete by the addition of the habitat, and the derivation of the specific name. Under each genus and sub-genus is an analytical table of the arrangement of the species, and a "key to the species," which will greatly facilitate and simplify the labors of the student.

The systematic arrangement is greatly in advance of that of the older manuals, the species included in Peziza and Helotium, in the "Handbook of British Fungi," being here distributed in a dozen genera and twenty-nine sub genera. A spirit of conservatism, however, runs through these changes, and the spore characters have not been given that value in the arrangement which will probably be ascribed to them by Professor Saccardo in his "Sylloge." Each genus is illustrated by figures of one or more of its species, the whole making twelve fine lithographic plates. A glossary of terms, a list of authors quoted, and a very complete alphabetical index, complete the volume. It is a most desirable acquisition to our mycological literature, and will, no doubt, fulfill the author's design in its publication, and give a fresh impetus to the study of the fungi of which it treats, not only in Britain, but also in this country.

CHAS. H. PECK.

### Engelmann's works.[2]

Mr. Henry Shaw has put the botanical fraternity under lasting obligations to him in the magnificent book lying before us. The writings of Dr. Engelmann were so much scattered, and at the same time so important, that something like this seemed necessary. It is Mr. Shaw's third munificent gift to botany, following closely upon that of the botanic garden and the School of Botany which bear his name. The work of editing must have been exceedingly laborious, and Dr. Trelease deserves his share of our gratitude. The preface is written by Dr. Gray, and his counsel runs all through the book. A fine portrait of Dr. Engelmann and a biographical sketch fitly introduce the work. Many of the plates had to be retouched, and some of them copied, but every one able to do anything gave his assistance, and the result is something for botanists to rejoice over. The edition is limited to 250 copies, of which one-half are for presentation. The remainder will be sold in sheets, probably at $10 a copy. This is a fitting memorial of one of our most distinguished botanists, and it augurs well for the future of botany in America that it can find such friends to further its interests.

[2] The botanical works of the late George Engelmann, collected for Henry Shaw, Esq. Edited by William Trelease and Asa Gray. 548 pp., 102 plates, 4to. Cambridge, Mass.: John Wilson & Son.

**Plant distribution.**

The foundation for the study of geographical botany seems to have been laid by Humboldt and Bonpland's "Essai sur la Géographie des Plantes," bearing the date of 1805. Since that time it has received considerable attention from very distinguised botanists, the bibliography of the subject showing such names as the DeCandolles, Robert Brown, Watson, Darwin, Hooker, and our lamented countryman, Prof. Gray. Probably Dr. Gray's most brilliant production was his "Relation of the Japanese flora to that of North America." As fascinating and important as this subject is, the older botanists were necessarily hampered by the dearth of material, but the times are now fast ripening for a study of this great department. The latest presentation of it lies before us in the shape of Drude's[3] eight charts, with descriptive text. He divides the flora of the world into fourteen regions as follows: (1) Northern, (2) Central Asia, (3) Mediterranean, (4) East Asia, (5) Middle North America, (6) Tropical Africa, (7) East African Islands, (8) Indian, (9) Tropical America, (10) Cape, (11) Australia, (12) New Zealand, (13) Andes, (14) Antarctic. Each of these has its subdivisions. His dealing with the North American flora may be taken as an illustration. Nearly all of the British possessions belong to the first or Arctic group, which also includes the southern shores of the great lakes and New England, and extends down the Appalachian system into North Carolina. Central North America belongs to his fifth group, while Southern Florida and most of Mexico belong to the ninth or Tropical American group, which extends southward so as to include the bulk of South America. As an illustration of the author's subdivisions we may take the Middle North American group, which is nearly coextensive with the United States. The subdivisions are four, viz.: (1) Californian, including the Pacific coast states; (2) Montana, including an area lying chiefly north of the 40th parallel, extending well up into British Columbia, and eastward to Minnesota; (3) North Mexico and Texas, including the areas the name implies and extending north about to the 40th parallel; (4) Virginian, commencing at the west with the prairie region and extending eastward to the Atlantic. It is easy to criticise these details, as, for instance, the boundary line between the second and third subdivisions. It is very apparent to the student of North American botany that the very characteristic Texano-Mexican flora does not extend bodily up to the 40th parallel; but these are details that can hardly be expected to be minutely accurate in such a world-wide presentation of the subject. The charts are most excellently prepared, and, of course, invaluable to any student of geographical botany.

**Practical botany.**

If there is anything in the so-called "practical botany" it is getting

[3] DRUDE DR. O.—Atlas der Pflanzenverbreitung. (Berghaus' Physikalischer Atlas, Abtheilung V.) Gotha: Justus Perthes, 1887.

abundant chance to show itself in the numerous laboratory guides. The last one on our table is another translation of Strasburger's "Botanische Practicum,"[4] that is, the abridged edition. In this journal the original German edition, Hillhouse's translation, and the second German edition have already been reviewed, so that nothing remains to be said concerning the subject matter of this admirable book. Two English translations were hardly necessary, and probably two were not contemplated by either translator. The translation before us is well done, but we miss the very useful list of materials needed at the beginning of each study, as well as the full list of reagents used. As for the book itself, the name of the publisher insures a book of such heavy paper and binding and expense as to very materially defeat its purpose of being a laboratory guide.

### Minor notices.

THE STAINING of living nuclei is one of the latest triumphs of histology, and one that puts the cell activities within comparatively easy reach of observation. In this journal (xii, 40 and 192) Mr. Douglas H. Campbell has already shown some of his results in this direction, and now he has distributed in pamphlet reprint[5] a full account of his experiments, conducted at Tübingen, under the title "The Staining of Living Nuclei."

A PRELIMINARY LIST of the vascular plants of the Lackawanna and Wyoming Valleys, by William R. Dudley, is published in the Proceedings of the Lackawanna Institute of History and Science, volume one The list includes 769 species, and is compiled with the customary care of the author, and is admirably printed.

A VERY BRIEF biographical sketch of Edward Tuckerman was published in this journal shortly after his death,[6] accompanied by a full bibliography of his scientific writings.[7] The National Academy appointed Dr. W. G. Farlow to prepare a memoir of their associate, which has been separately printed.[8] The sketch of Tuckerman's life is admirable—compact and sympathetic. The bibliography adds but two articles to our list, viz.: "Note on Geaster quadrifidus," *Am. Jour. Sci.* xxxvi, 330 (July, 1839), and "Vegetation in the White Mountains," in King's "The White Hills," Boston, 1860. pp. 230–241. Some reference to Mr. Willey's bibliography would not have been out of place.

THE PLANTS which produce burs or other devices for attaching their seeds or seed vessels to the hair or wool of animals, and thus securing distribution, are interesting from several points of view. A good service

[4] STRASBURGER, DR. EDUARD.—A manual of the microscope in vegetable histology: from the German by Rev. A. B. Hervey. 342 pp., fully illustrated, 8vo. Boston: S. E. Cassino, 1887.

[5] From Untersuchungen aus dem bot. Institut in Tübingen.

[6] Vol. xi, p. 73. [7] L. c. p. 74, 182.

[8] Memoir of Edward Tuckerman, 1817–1886. Read before the National Academy April, 1887. pp. 14, 8vo. Washington: The National Academy.

has been rendered by Dr. Huth in bringing together in one monograph[9] a concise account of the plants having fruit with hooked or barbed prickles or spines. He makes five classes: (a) those in which the roughness also assists the plant in climbing during growth, as the bedstraws; (b) those from which the seeds are projected, as the Martynia and other common kinds in which this property is not always noticed; (c) the rare anchor burs, *e. g.* Trapa natans; (d) the boring fruits, such as Stipa, Erodium and other grasses; and (e) clinging burs, like the stick-tights. Most of the space is devoted to a brief systematic account of all bur-producing plants, 163 genera being mentioned.

## NOTES AND NEWS.

"SOME COMMON THISTLES" is the title of an illustrated paper by Prof. L. H. Pammel in *Colman's Rural World* (March 9).

PROFESSOR J. C. LYFORD is giving a course of illustrated botanical lectures before the Worcester (Mass.) Natural History Society.

DR. CHRISTIAN LUERSSEN has been called from the Forest school at Eberswald to be professor of botany and director of the botanic garden at Königsberg.

THE METHOD of bleaching, staining and mounting the unsectioned leaves and sporangia of ferns is described by the careful preparateur, Rev. J. D. King, in the *Microscope* for March.

PROFESSOR BAYLEY BALFOUR has been elected to the chair of botany in Edinburgh University, made vacant by the death of Dr. Dickson. This leaves a vacancy in the botanical department at Oxford.

DR. GRAY'S last writing appears in the *American Journal of Science* for March, being the Botanical Necrology for 1887. The list contains the names of W. E. Tolmie, John Goldie (both of whom died in 1886), Albert Kellogg, William Boott, Ezra Michener, and H. W. Ravenel.

DR. GEORGE L. GOODALE has in the past two months delivered a course of twelve lectures, at the Lowell Institute in Boston, on "Forests and Forest Products." A printed syllabus of each lecture was distributed to the audience. Judging from these synopses and Dr. Goodale's great attractiveness as a lecturer, the course must have been exceedingly interesting.

A PRESUMPTUOUS and unblushingly egotistical article on the germ of the southern cattle plague is given in the March *Microscope* over the signature of Dr. F. K. Billings, "director of the patho-biological laboratory of the State University of Nebraska," laying claim to all honors worth a straw in the study of this subject. If this is the manner in which "the sun of original investigation seems to be rising in the west," we hope for the credit of American science that its rays may be kept under a bushel as much as possible.

[9] HUTH, DR. ERNST.—Die Klettpflanzen mit besonderer Berücksichtigung ihrer Verbreitung durch Thiere. (Bibliotheca botanica, Heft 9.) 36 pp., 78 wood-cuts, 4°. Cassel: Theodor Fischer, 1887.—4 marks.

THE DANGER of laying too much stress upon spore measurements, particularly in the Agaricini, is dwelt upon by Dr. M. C. Cooke in a somewhat caustic article in *Grevillea* for March. The variability of the spores of the same species, and the considerable difficulty of making accurate measurements, suggest the necessity of giving authority for the same when such data are added to descriptions originally published without them.

DR. J. BRUNCHORST[1] has carefully investigated the potato disease known as "scab," and finds it produced by a Myxomycete, for which he proposes the name Spongospora Solani. The plasmodium he found in the cork-cambium cells, which brings about the hypertrophy of these cells, resulting in the formation of the swellings. These pustules subsequently dry up and crack or become hollowed out, forming the scab-like markings.

IN THE *Revue Bryologique*, 1888, p. 2, A. L. Gronval criticises sharply some of the conclusions of Venturi as to the species of Orthotrichum which he elaborated for Husnot's *Muscologia Gallica*. M. Venturi is inclined to reduce the number of species by combining the described forms, a process which does not coincide wholly with M. Gronval's views. As many of our American species are treated, the paper is worthy the attention of our bryologists.

PNEUMATODES is the name of certain root organs studied by Ludwig Jost, found chiefly on certain palms, and discovered to be of use in the aëration of the plant. They are outgrowths from the root, point upward into the air, and are characterized by having a swollen portion different from the rest. Dr. Goodale (*Am. Jour. Sci.*, March, 1888), in commenting on Jost's communication (*Bot. Zeit.*, Sept., 1887), refers the "cypress-knees" to this new class of organs.

THE OFFICE of the seed tuber in the potato plant is treated from experimental evidence by E. S. Goff in *Agricultural Science* for February. His conclusions are that the plant takes up nearly or quite all the available food from the tuber before the latter decays, that such nutriment is better suited to the needs of the young plant than nutriment from the soil, and that the rapidity with which the transfer is made depends upon outside conditions, such, especially, as the condition of the soil.

REV. THOS. MORONG continues his studies in the Typhaceæ in *Bull. Torr. Bot. Club* (March) by presenting our six species of Sparganium. They are *S. eurycarpum* Eng., *S Greenei* Morong (a new California species), *S. androcladum* Morong (*S. simplex*, var. *androcladum* Eng.) and var. *fluctuans* Morong (*S. simplex*, var. *fluitans* Eng.), *S. simplex* Huds. and vars. *multipedunculata* Morong (a new Montana form) and *angustifolium* Eng., *S. minimum* Bauhin, and *S. hyperboreum* Læst. (from Hudson Bay and Labrador).

PROFESSOR LUNDSTRÖM, of Upsala, has discovered that Melampyrum leaves secrete nectar for the purpose of attracting ants, who in turn carry the seeds of the plant in their mouths down to the ground, as they resemble ant cocoons. So complete is this mimicry that seeds strewed upon the ground were found to be carefully saved by the ants as if they were cocoons. The thin membrane investing the seed, and giving it its cocoon-like appearance, falls off soon after it reaches the ground, after which it remains undisturbed by the ants.

[1] Abstract in *Bot. Centralblatt*, xxxiii, 209.

REV. THOMAS MORONG is going to visit South America, mainly under the auspices of the Torrey Botanical Club. He expects to sail about the first of June for Buenos Ayres, with the purpose of exploring and collecting in the great water system which empties into the Atlantic through the Parana and the Rio de la Plata, and afterward of crossing the Andes by the overland route into Chili. He also hopes to reach Lake Titicaca, in Peru, before returning. The great water systems of South America should be particularly attractive to a student of aquatics.

IN THE preliminary report which M. Viala has made to the French minister of agriculture upon his six months' stay in this country for the study of American grapes and grape culture, he devotes most space to the range of our native species and their hybrids growing in limestone regions, especially those of the more southern part of the country, and concludes that the most promising for use on the calcareous soils of France are Vitis Berlandieri, V. cinerea, and V. cordifolia. A more extended account of his studies here, including diseases of the grape and other topics, will be published after a time. He speaks warmly of the attention and assistance accorded him by Americans, and particularly by Commissioner Colman and Professor Scribner, of the U. S. Department of Agriculture.

"THE KEW OF THE EAST" is the designation of the Royal Botanic Garden at Calcutta. In the last annual report (1886-87), being for the 100th year of the garden's existence, a sketch of the history of the institution is given, which is also printed in the *Gardeners' Chronicle* (Feb. 18). Some notable names in botany appear among its directors, as, for instance, Dr. William Roxburgh, from 1793 to 1814, the father of Indian botany and the author of the Flora Indica; also, Dr. Nathaniel Wallich, from 1816 to 1846, well known for his explorations and extensive distribution of Indian plants; also, Mr. C. B. Clarke, acting director for a time, whose name is very familiar in connection with descriptions of Oriental plants. The present director, Dr. King, is credited with having transformed the garden and brought it up to its present high estate.

THE ACTION of frost on seedlings is the subject of some interesting experimental study. "In cold climates the annual period of growth is shortened, the season during which the plant must vegetate is condensed, and the shoots and flowers have to unfold rapidly in order to 'make hay while the sun shines.'"—*Gardeners' Chronicle*, Feb. 25. The following experiment will serve to indicate the work and its results: "Müller-Thurgau took ten potatoes, all alike, and of about the same size and weight. He placed five in an ice-cellar, and surrounded them with ice; the other five were kept in an ordinary house cellar. Those exposed to the freezing process yielded a large crop in three months after planting, while the others, planted at the same time, and in exactly the same way, soil, etc., had as yet only begun to show shoots, and bore no tubers." (l. c.)

THE PROPOSED government station for the study and testing of grasses which is projected as an adjunct to the botanical division of the Department of Agriculture is meeting with some opposition. The *Nation* (No. 1,185) contains a three-column argument to show that, while the idea is in itself good, the project is needlessly expensive and hopelessly imperfect. Better results might be accomplished, it believes, by special provision for such work at the various state experiment stations, thus costing less and at the same time giving the advantage of having the work done in the climate and region where the results are to have practical appli-

cation. Without entering into the discussion, it is safe to affirm that to distribute the proposed work to the state stations, while it has advantages in regard to climate, would, nevertheless, result in leaving the matter in about the same condition as it will be without congressional action.

THE FIRST FOUR numbers of *Garden and Forest*, the new horticultural journal, more than fulfill the promise of its announcement. The list of distinguished contributors is already a long one; it includes Mrs. Schuyler Van Rensselaer, on landscape gardening; Francis Parkman, B. E. Fernow, J. Hoopes, Robert Douglas, on forestry and tree growing; Peter Henderson, John Thorpe, William Falconer, A. H. Fewkes, on gardening and floriculture; a number of foreign contributers and the following well known botanists: Dr. Sereno Watson, Dr. W. G. Farlow, Dr. Wm. Trelease, Dr. W. J. Beal, Dr. G. L. Goodale, Prof. L. H. Bailey, Jr., A. A. Crozier and C. G. Pringle. The typography and printing, together with the character of the illustrations, far surpass any horticultural achievement of the kind before attempted in this country. The opening article is a tribute to the memory of Dr. Gray, and the second number has an admirable photogravure of the bronze medallion of Dr. Gray by A. St. Gaudens. There is also an account of the life of Dr. DeBary. The form and scope of the journal call to mind the *Gardeners' Chronicle* of England, and we can make no higher wish than that in stability and influence it may equal its esteemed contemporary across the water.

AN ILLUSTRATED WORK on the British Uredineæ and Ustilagineæ, by Charles B Plowright, F. L. S., is projected. It is to contain descriptions of all British species of these fungi, and also an account of their biology, including the methods of experimental culture. The work must prove of great service to students, especially as it is prepared by an authority so justly famous for the success of his experimental methods. The determination of the genetic connection between the forms of heteræcismal rusts is a fascinating study that can be carried on with simple appliances, and this book will be a boon to isolated botanists with inclinations toward original investigation. The publishers, Kegan Paul, Trench & Co., London, will begin the printing as soon as the requisite number of subscribers is obtained. Intending purchasers should at once send their names to the author (7 King St., King's Lynn, England). The price will be 7s 6d, or about $1.90, to subscribers, payable upon delivery, or 10s 6d, about $2.65, to non-subscribers.

A VERY appreciative editorial notice of Dr. Gray appears in *Gardeners' Chronicle* (Feb. 4), one or two passages from which we quote: "Apart from his scientific eminence, the clear-headed, genial character of the man endeared him to all with whom he came in contact. His vast knowledge, his untiring industry, his singleness of aim, his keen discrimination, his unselfish pursuit of science, his eminently judicial qualities, caused him to be respected even by those who exposed themselves to the sharp rapiers of his polished criticism." "No one on this side of the Atlantic thought of Asa Gray as an American cousin— he was here always a brother Englishman." "Asa Gray, as will be judged from his books and memoirs, was no dry-as-dust student of dried plants; their life-history and the working of their mechanism had a charm for him, and no man was happier than he in popularizing, in the best sense of the term, the discoveries of the science, and creating an interest in them among the general public." "America had no truer son than he; philosophy no more noble prophet. All honor to his memory, deep gratitude for his work and his example."

No firm has done more to provide the plant collector with suitable appliances than James W. Queen & Co., of Philadelphia. Their portable plant presses, collecting boxes and hand lenses are in this way thoroughly satisfactory. Their microscopes and high power lenses are also well known throughout the country. The opportunities they give of obtaining second-hand apparatus from their clearance sales should be prized by the student of small means.

Among the notable articles soon to appear in *Scribner's Magazine*, probably none will be of more general interest than the series on railways. This will include papers by able writers and engineers upon many phases of the subject. Some of the topics already announced are the building of railroads, engineering feats in the way of construction of great tunnels, bridges, curves, etc., locomotives and cars, administration of railroad affairs, passenger travel, and the life of the employee. The whole series will be fully and richly illustrated.

There is no literary news journal which has ever attained the deservedly high rank of *The Critic*, which appears weekly, and is now in its eighth year. It is especially attractive to such non-professional literary folk as like to become acquainted with the personality of the authors whose works they read and read about. Its book reviews are models of just and candid criticism, and withal entertaining reading.


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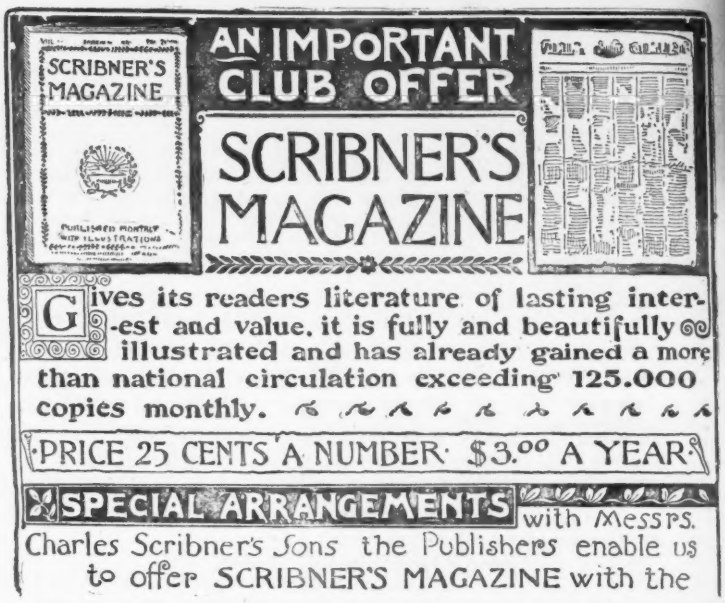
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PLATE II should be placed in the April number. The explanation of figures is as follows:

1. Matured frond. 2. Cluster of young fronds. 3. Under surface of a basal pinna. 4. Upper surface of an intermediate pinna and rhachis. 5. Gemmule vertically divided. 6. Scale from base of stipe.